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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/756,829

01/14/2004

Robert John Socha

55071-328

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20277 7590 01/18/2007  
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EXAMINER

MEMULA, SURESH

ART UNIT

PAPER NUMBER

2825

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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3 MONTHS

01/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/756,829

Applicant(s)

SOCHA ET AL.

Examiner

Suresh Memula

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 8-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :1/14/04; 7/14/04; 5/24/05; 4/11/06.

### **DETAILED ACTION**

This is a response to the election filed on 06/12/2006.

The examiner acknowledges:

- Claims 1-18 are pending
- Election of Group I (Claims 1-7), without traverse
- Claims 8-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) for being drawn to non-elected claims.

#### ***Information Disclosure Statement***

1. The information disclosure statement filed 04/11/2006 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the crossed-out references fail to provide a date. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

#### ***Claim Objections***

2. Claim 6 is objected to for being improperly dependent on itself. For examination purposes, Claim 6 is interpreted as being dependent from Claim 5.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. **Claims 1-7 are rejected under 35 U.S.C. 102(e)** as being anticipated by US Pub. No. 2002/0062206 to Liebchen (Liebchen).

5. As to Claim 1,

defining a transmission cross coefficient ("TCC") function (Paragraph 0009) determined in accordance with an illumination pupil (Abstract; Paragraphs 0007, 0009; FIG. 1B) and a projection pupil (Abstract; Paragraphs 0007, 0009; FIG. 1B) corresponding to an illuminator (Abstract; Paragraphs 0009, 0011; FIG. 1B);

representing at least one resolvable feature of a mask to be printed on the substrate (Paragraph 0007, 0026, 0240-0241, 0245, 0254) by at least one impulse function (Paragraphs 0007, 0066, 0240); and

creating an interference map (Abstract; Paragraphs 0001, 0003, 0012) of a predetermined order (Abstract; Paragraphs 0009, 0019) based on the at least one impulse function (Paragraphs 0007-0009, 0066, 0240) and the TCC function (Paragraphs 0003, 0007-0009), wherein the interference map represents the at least one resolvable feature to be printed on the substrate (Paragraph 0007, 0026, 0241, 0245, 0254) and areas of destructive interference (Paragraphs 0001, 0003, 0243).

6. As to Claim 2, placing an assist feature in the mask corresponding to the areas of destructive interference map (Paragraph 0254).

7. As to Claim 3, wherein the assist feature is non-resolvable (Paragraph 0254).

8. As to Claim 4, wherein the interference map models light intensity incident on the substrate (Paragraphs 0003, 0017).

9. As to Claim 5, further comprising placing at least one assist feature on an area of the mask (Paragraph 0254) corresponding to an area on the interference map having a light intensity of a predetermined level (Paragraphs 0001, 0003, 0212, 0240, 0251, 0253-0254) corresponding to the areas of destructive interference (Paragraphs 0001, 0003, 0243).

10. As to Claim 6, wherein the predetermined level corresponds to a resolvable light intensity (Paragraphs 0001, 0003, 0254).

11. As to Claim 7, wherein the interference map represents change in light intensity incident on the substrate (Paragraphs 0001, 0003, 0017).

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**Conclusion**

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suresh Memula whose telephone number is (571) 272-8046. The examiner can normally be reached on M-F 8am-4:30pm EST.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on (571) 272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Suresh Memula  
Art Unit 2825  
January 5, 2007

  
PAUL DINH  
PRIMARY EXAMINER